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ABSTRACT

This research contrasts the learning effects of an affective dimension of meaningfulness with the word-quality of consonant-vowel-consonant trigrams. Subject rated trigrams for both "association value"--having word-quality versus lacking word-quality--and "reinforcement value"--liking versus disliking the trigram regardless of word quality. Paired associates lists were then constructed in which association value and reinforcement value were counterbalanced. Subjects learned two different lists. Experiment I established that the order of positive transfer across lists (best to poorest improvement) was as follows: dislike to liked, like to liked, disliked to disliked, and liked to disliked. Association value meaningfulness failed to produce interlist effects. Experiment II found that the left-hand member of a paired-associate contributed more to nonspecific transfer than the right-hand member. Experiment III found that the learning style of whites is relatively more along an association value than a response value dimension, whereas blacks reflected the opposite tendency. It was concluded that (1) affective factors play a greater role than hitherto acknowledged in theories of human verbal learning and (2) blacks may be socio-culturally different in style of learning than whites, thereby contributing to much of the confusion regarding relative capacity between races. (Author/JM)

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EMOTIONAL FACTORS IN THE LEARNING AND NONSPECIFIC TRANSFER OF WHITE AND BLACK STUDENTS

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Author's Abstract

This research contrasts the learning effects of an affective dimension of meaningfulness with the word-quality of consonant-vowel-consonant (CVC) trigrams. Subjects rated trigrams for both "association value" (AV) (having word-quality vs. lacking word-quality) and "reinforcement value" (RV) (liking vs. disliking the trigram regardless of word quality). Paired associates lists were then constructed in which AV and RV were counterbalanced. Subjects learned two different lists. Experiment I established that the order of positive transfer across lists (best to poorest improvement) was as follows: disliked to liked, liked to liked, disliked to disliked, and liked to disliked. AV meaningfulness failed to demonstrate interlist effects. Experiment II found that the left-hand member of a paired-associate contributed more to nonspecific transfer than the right-hand member. Experiment III found that the learning style of whites is relatively more along an AV than an RV dimension, whereas blacks reflected the opposite tendency. Conclusions were: (1) affective factors play a greater role than hitherto acknowledged in theories of human verbal learning; and (2) blacks may be socio-culturally different in style of learning than whites, thereby contributing to much of the confusion regarding relative capacity between races.

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EMOTIONAL FACTORS IN THE LEARNING AND NONSPECIFIC TRANSFER OF WHITE AND BLACK STUDENTS

INTRODUCTION

There is considerable interest these days in the question of "relevance" or the making of school subjects relevant for the learner. In a sense, relevance deals with the significance, import, or interest value which materials have for the learner.

There is also a general acceptance of the view that the transfer of learning effects across unrelated materials (nonspecific transfer) does not really take place. The early education theories of formal discipline (study Greek to facilitate learning mathematics) have been pretty well discredited.

The perennial nature-nurture issue which has bedeviled psychology since its inception as a science has recently made another highly publicized round of heated controversy thanks to Jensen (1969) and his critics (Cronbach, 1969; Humphreys & Dachler, 1969; Hunt, 1969; Kagan, 1969). The issue here is that of racial differences in learning capacity and intelligence. But the complete list of factors involved in such comparisons has probably not yet been circumscribed.

Finally, there is a remarkable dearth of research being conducted on the basic contribution which affective or emotive factors have to play in human learning. The common tie binding all of the above issues in human learning can be seen as precisely this sort of factor - whether or not material is judged to be positive and/or negative in affective or emotive tone by the learner in question! The present series of three experiments was conducted to grapple with this common issue. There are a few sub-headed areas to cover before turning to a consideration of the specific research design followed in the present series.

A. Frequency vs. Non-frequency Theories of Meaningfulness in Human Learning. Although there are probably several potential dimensions along which the meaningfulness of a verbal item might be assessed, in point of fact the major theory of meaningfulness employed by verbal learning investigators to date has resolved itself into a single dimension: i.e., frequency over time. Modern theories emphasize the number of past encounters - e.g., positive and/or negative reinforcements - a subject (S) has had with some verbal item (Underwood & Schulz, 1960, p. 91), the number of incidents a verbal item has in the standing language structure (Shapiro & Gordon, 1971), or the number of Ss who find word-quality(s) in quasi-language items (Archer, 1960; Noble, 1952). Even ratings of familiarity and pronounceability ultimately resolve themselves into some theoretical formulation which rests upon frequency of contact over time (Goss & Nodine, 1965, pp. 15-16). For the present report all such frequency factors will be termed Association Value (AV).

In contrast to these measures there has been a continuing theoretical role suggested for a dimension of meaningfulness (i.e., extent of meaning of "whatever"

nature a verbal item may suggest to S) drawing on S's judgment within time of materials he is about to learn or actually is learning. Since at least Tait's (1913) early work on the pleasantness vs. unpleasantness of words, it has been repeatedly noted that the positively connoting verbal item has a superiority in acquisition to the negative (see Goss & Nodine, 1965, pp. 71-72 for an overview of this research).

The present report extends a line of research which has proceeded on the assumption that S's judgments of verbal materials as to "good vs. bad" or "like vs. dislike" are not identical to identity estimates of word-quality, or to the dispersion of terms in a memory bank or cultural language structure. Nor can such (affective? aesthetic?) factors be entirely reduced to a "frequency of past contact" explanation. The construct under study has been termed Reinforcement Value (RV), and it has been operationally measured via a "like vs. dislike" rating (Abramson, Tasto, & Rychlak, 1969; Rychlak, 1966; Rychlak, McKee, Schneider, & Abramson, 1971; Rychlak & Tobin, 1971; Tenbrunsel, Nishball, & Rychlak, 1968). Cross-validating factor analyses have shown that RV loads on the same factor which draws Osgood's Evaluation (Flynn, 1967, 1969).

The effects of RV in verbal learning follow in part Tait's (1913) initial observations in that liked materials are usually acquired more readily than disliked materials. This is the case even when various frequency factors are held constant. Indeed, RV has never been found to enter into interactions or otherwise to be influenced by the typical AV measures cited above. This "RV positive effect" has been found in both mixed and unmixed paired-associate lists, as well as in free-recall procedures. In addition, a significant turnabout has been found in that abnormal Ss are prone to learn their disliked more rapidly than their liked paired-associate materials (Rychlak et al., 1971). This has been termed the "RV reversal effect." The underachieving high school S is found to rely more on RV differences in verbal materials than the overachiever, who somehow reduces but does not eliminate such evaluative aspects of learning (Rychlak & Tobin, 1971). The RV dimension of meaningfulness has been shown to contribute to learning at all levels of Archer's (1960) trigram AV (Abramson et al., 1969), to word acquisition (Andrews, 1971), to the association of names and faces (Galster, 1971), and to the association of trigrams to pictorial designs (McFarland, 1969).

B. Nonspecific Transfer and RV. A nonspecific transfer paradigm in paired-associate learning may be symbolized as A-B, C-D, which indicates that over two lists the left-hand (so-called "stimulus") members A and C, and the right-hand (so-called "response") members B and D have nothing in common. The first list (A-B) is entirely different from the second list (C-D), except in the fact that both are paired associates lists. Over two-thirds of the few studies in the literature which actually used this paradigm employed it as a control condition for other paradigms, like the A-B, A-C or the A-B, A'-B paradigms, and so forth. This is probably a reflection of the fact that most psychologists do not expect much more than chance nonspecific transfer effects. In a sense, this is what "nonspecific" means: uncontrolled, chance differences.

It was Noble (1961) who first raised the question of nonspecific transfer in verbal learning by drawing an analogy between the motor-task Jones and Bilodeau

(1952) used in a transfer study and his own AV estimate of trigram meaningfulness (m). By manipulating m Noble argued that he could alter the ease or difficulty of verbal items, and hence S could be tested across succeeding lists of "difficult to easy" (much or some transfer) or "easy to difficult" (little or no transfer) in the style of Jones and Bilodeau. However, this line of research proved negative, and so confident was Noble in his lack of findings on AV meaningfulness that he concluded: "...meaningfulness facilitates rate of acquisition but has no influence upon [nonspecific] transfer of training" (1961, p. 209). Subsequent AV studies were to support Noble in his dictum (Dean & Kausler, 1964; Houston, 1965; Jung, 1963; Merikle & Battig, 1963; Stark, 1968).

In light of these uniformly negative findings on AV meaningfulness in nonspecific transfer, a study conducted on RV by Rychlak and Tobin becomes significant. In having Ss move across two lists having different compositions of RV, the latter authors found that when S moved from "disliked to liked" lists the transfer was dramatically greater than when he moved from "liked to disliked" lists. All 32 Ss in the RV-negative to RV-positive condition learned the second list faster, whereas in the reverse order only 19 Ss reflected this expected practice effect (out of 32 possible). The differences in rate of improvement were, of course, highly statistically significant.

It should be emphasized at this point that the earlier studies on transfer utilized an AV estimate drawn nomothetically from sample ratings. That is, the experimenter (E) considered "highly meaningful" hence "easy" verbal items to be those which reflected a greater incidence in some normative standard, and vice versa for the difficult items. The individual S was not asked to associate to the materials beforehand to determine whether or not he personally had an associative recognition of word-quality (i.e., AV). The latter, idiographic tactic is used routinely in RV research. Hence, the possibility remained that interlist AV effects could be demonstrated if this greater control were exercised on the verbal materials S was asked to learn.

It seemed that an experimental confrontation was called for between AV and RV, in order to establish as clearly as possible that these are two independent dimensions of meaningfulness, that they make separate contributions to paired-associates acquisition within lists, and that they may or may not contribute to nonspecific transfer across lists.

C. Intrapair Effects of RV. For those theorists interested in meaningfulness, the paired-associates paradigm has built within it the question of intrapair influences emanating from the left-hand or so-called "stimulus" (St) member and/or the right-hand or so-called "response" (Re) member. The first such study was apparently conducted by Winzen, in G. E. Müller's laboratory, circa 1921 (Noble, 1963). Winzen allowed Ss either 20 or 0 prelearning exposures to pronounceable syllables, and then found that the St_{20}-Re_0 condition led to facilitation of learning whereas St_0-Re_{20} PA condition did not. Gannon and Noble (1961) were later to cross-validate these findings, using dissyllables as learning materials. Comparable findings have been noted in the work of Morikawa (1959), in that Japanese Ss unfamiliar with sub-word items in the Re position relied on St meaningfulness whereas Ss familiar with items in the Re position did not show such effects. Cieutat (1960) has also presented findings of this

nature, using pronounceable sub-word items. Gannon and Noble were to conclude that the familiarization aspect of verbal materials as typified by these studies was a completely different dimension than the meaningfulness measure, which had been reporting intrapair findings at the Re end of the paired-associates paradigm. A theoretical disagreement is immediately apparent here, since many theorists define familiarization as one aspect of meaningfulness (see Underwood & Schulz, 1960, p. 50).

Turning to the studies on meaningfulness, Goss and Nodine have concluded that the preponderance of evidence is on the side of Re, with the typical pattern of from poorest to best acquisition rate in the St-Re alignment being: low-low (L-L), high-low (H-L), low-high (L-H), and high-high (H-H) (1965, p. 74). Yet, looked at in detail, the picture is not without its question marks. The clearest evidence for this particular order of acquisition rate, which favors Re (L-H) over St (H-L) has been found when sub-word units (trigrams, dissyllables) have been used as both St and Re members (Cieutat, Stockwell, & Noble, 1958; Kothurkar, 1963; L'Abate, 1959). When words are used in the paired-associates arrangement, we are more likely to find St meaningfulness superior to Re meaningfulness. Postman (1962) used three levels of Thorndike-Lorge values in paired-associate combination, and though both St and Re meaningfulness were influential in original learning, St meaningfulness was active in relearning while Re meaningfulness was not. Paivio (1964), using abstract (A) vs. concrete (C) nouns as his measure of high and low meaningfulness, found the classical St-Re pattern altered to St superiority in terms of (difficult to easy lists) A-A, A-C, C-A, and C-C. He also found a higher point-biserial r between recall scores and St meaningfulness than between recall scores and Re meaningfulness.

The RV line of research has never considered the intrapair factor before. However, based upon the fact that Ss in the RV line are asked to pre-rate trigrams on two occasions (idiographically), and to that extent may be said to be "familiarized" with the materials they eventually learn, it was hypothesized that RV would be more akin to the familiarization research and show its greatest impact on the St side of the St-Re pairing. (It should be noted that the project director does not accept the terminology of stimulus and response in the paired-associates situation...but for continuity with earlier studies the designations have been retained.)

D. Interracial Factors and RV. Taking RV as tantamount to a dimension of the "perceived relevance" of CVC trigrams, O'Leary (in press; originally done as a doctoral study under the project director) had groups of Ss learn such materials which varied systematically in both RV and AV. He was thus able to control for one dimension of meaningfulness while observing the effects of the other on rate of acquisition among both black and white junior college Ss. He found a trend ($p = .10$) in the interaction term of his ANOVA which suggested that whereas the white Ss relied more on AV than RV in their learning styles, the black Ss fell back more on RV than AV. It was more important to the whites that a trigram have some modicum of word-quality (AV) than it was that they either like or dislike it. For the blacks, however, likability was a more important dimension than whether or not a trigram had word-quality.

Following this initial work, Hewitt (1969) began a much larger project on a

group of junior college females. Due to various factors he was unable to complete all of the conditions initially hoped for, and consequently the present investigator sought funds to complete this project. The full study will be presented below as Experiment III.

The project director and Hewitt (1969) therefore followed up O'Leary's theoretical speculations. That is, since blacks do not perceive the same relevance of such highly verbalized tasks as paired-associate lists and possibly even other school-like endeavors as do whites, they rely more on an affective dimension in their learning styles than do their white counterparts. Moreover, in the culturally disadvantaged climate of the typical black student which these junior colleges attracted (St. Louis, Missouri), the emphasis on AV meaningfulness (word-quality, so-called intellectualized discriminants, etc.) is reduced in favor of the more interpersonal feeling-tones epidomized by RV meaningfulness.

The latter speculation has received some experimental support. Middle-class children responded similarly to instructions given in positive, neutral, or negative tones of voice, while lower-class children responded best to a positive tone (Kashinsky & Wiener, 1969). Tonal qualities seem especially vital to the lower-class child, who is not likely to respond when a neutral quality is affected by E (Brooks, Brandt, & Wiener, 1969). Baratz (1969) has also reported on the difficulties experienced by black children when they are forced to deal with language outside of their typical dialect. There has not been sufficient work on the word-association patterns of black Ss to conclude that AV differences actually exist across race. The rate of responding to words seemed roughly equal in a study conducted by Bice (1938), but the safest strategy here is to employ an idiographic tactic, in which white and black Ss alike can rate trigrams for AV and RV.

Since there are three experiments to report, each having the common tie of a nonspecific transfer design added into other questions, it would seem most reasonable for continuity to present each study individually. Hence, rather than attempting to combine all three methodologies into one discussion of "method," we will simply take up each study in turn and reserve our theoretical statements for the Conclusions section to follow. A Recommendations section will also follow to suggest directions for further study.

EXPERIMENT I

METHOD

Hypotheses. (1) AV and RV will have significant but independent (main) effects on acquisition in PA tasks. (2) Idiographically assessed AV and RV will both have interlist effects in a nonspecific transfer design of the A-B, C-D variety.

Rationale. Previous research (ref. Introduction) supports hypothesis 1. This research also suggests that AV and RV have parallel influences on acquisition in single list studies; hence, to reason differently for nonspecific transfer effects with an idiographic measure would be inconsistent. It is believed

that idiographic procedures add considerable control to meaningfulness estimates and hence this factor obviates the negative findings of other studies on AV (ref. Introduction).

Subjects and Procedure. Subjects were 64 (32 males, 32 females) volunteer college students, primarily from the Freshman and Sophomore class levels. They made AV and RV ratings in a group and were then tested individually in the PA task. An S was administered a mimeographed rating form on which 140 trigrams from the middle ranges of Archer's (1960) nomothetic AV values (40-70%) were printed (see Rychlak, 1966, for the initial work done on these trigrams). On the first two occasions S was administered the trigrams with 48 hours intervening and asked to answer Yes or No to the question: "Does the trigram look like a word, sound like a word, remind you of a word, or can you use it in a sentence?" (after Archer, 1960). Those trigrams rated Yes on both occasions were taken as meaningful to S in the sense of AV, and those rated No were considered less or unmeaningful.

One week following the AV ratings S was again administered the 140 trigrams for the typical RV procedure: Like Much, Like Slightly, Dislike Slightly, Dislike Much. The 48 hour period between idiographic RV ratings was also observed. The ambivalent scorings (i.e. unreliable) were disregarded in the present study, as they are in most of the RV research, due to their unreliability. Nor was there an attempt to study the unreliable AV ratings made by Ss. The Es arrayed a series of eight conditions which perfectly counterbalanced AV and RV across two entirely different 6-pr. PA lists. A mixed design of three between-subjects variables and one within-subjects variable was the result (2^4 factorial). The variables were Sex X RV X AV X Lists.

Subjects were randomly assigned to these eight conditions. In list 1 an S might thus learn 6-prs. having the idiographic quality of AV-no, RV-liked and then follow this with a list of AV-no, RV-disliked. In this case RV-positive would have been removed from the materials to be learned in the second list. In another instance S might move across lists having the characteristics of AV-no, RV-disliked to AV-yes, RV-disliked. In this case AV meaningfulness would have been "added into" the materials to be learned. It should be emphasized that both PA members had identical meaningfulness qualities; i.e., so-called stimulus vs. response meaningfulness was not under study.

The lists were presented by memory drum, with three different orders of lists to counter serial learning cues and a 4 sec. exposure time. Method of anticipation was followed, with two correct anticipations for the entire list taken as learning criterion. Total testing time occupied from 20 min. to 1 hr.

RESULTS

A 2^4 factorial ANOVA was run to test hypothesis 1, with three between (sex, AV, RV) factors and one within (lists) factor. Although females tended to reach criterion faster than males, there was no significant sex difference. A significant main effect was found for AV, with means (and standard deviations) as follows: AV-yes, 12.11 (6.83); AV-no, 14.72 (7.19); F (1, 56) = 6.44, $p < .01$.

An RV main effect was also apparent, as follows: RV-liked, 11.77 (5.65); RV-disliked, 15.06 (7.57); F (1, 56) = 10.26, p = .002. A pronounced nonspecific (positive) transfer effect was evident, as follows: List 1, 16.31 (7.51); List 2, 10.52 (4.62); F (1, 56) = 29.64, $p < .001$. There was no interaction between lists and either AV or RV, but this was due to the nature of this ANOVA which would require a differential effect between lists to reflect a significant finding. In short, the first ANOVA demonstrated that AV and RV each had effects in both lists, and that these effects did not differ between lists. Since there was no interaction between AV and RV, the independence of the two measures of meaningfulness was completely supported. Hypothesis 1 was thus entirely substantiated.

In order to test hypothesis 2, two ANOVAs were run which collapsed one measure of meaningfulness on the other while the latter was being assessed sequentially, as follows: ++, +-, -+, --. This called for a 2 (Sex) X 4 (Sequences) X 2 (Lists) ANOVA with the first two factors between conditions and the last a within-subjects condition. For example, Es could first assess the role of AV-yes (+) to AV-yes (+), AV-yes (+) to AV-no (-), AV-no (-) to AV-yes (+), and AV-no (-) to AV-no (-) with RV held constant across these sequences. Then a second run of the 2 X 4 X 2 ANOVA would establish these identical patterns of liked vs. disliked RV with AV held constant.

Table 1 (see following page) contains the means and standard deviations of AV and RV across lists in terms of the order sequences outlined. The crucial test of hypothesis 2 depended upon interaction effects between the four order sequences and the two lists. This interaction failed to reach significance for AV, with F (3, 56) = 1.69. However, it did achieve significance on RV, with F (3, 56) = 3.15, p = .03. There were no sex main effects or interactions. Note that the condition accounting for maximum (positive) transfer was when S moved from RV-negative to RV-positive, and the condition reflecting the least nonspecific transfer was when S moved from RV-positive to RV-negative. This is a cross-validation of Rychlak and Tobin (1971). The trends for AV are essentially in line with RV. Even so, the prediction of hypothesis 2 proved true only for RV. Noble's dictum concerning AV continues to stand.

EXPERIMENT II

METHOD

Hypotheses. (1) RV will be shown to have intrapair influences on rate of acquisition in a paired-associate task. (2) These intrapair influences will be shown to play a role in nonspecific transfer. (3) Considering positive RV as tantamount to high (H) meaningfulness and negative RV as low (L) meaningfulness, the findings on RV will follow those of familiarization (ref. Introduction, subsection C, above). That is, the precedent member of a pair (in this case, the left-hand member) will exert greater influence a la points 1 and 2 than the sequacious member (in this case, the right-hand member).

Rationale. After weighing the researches in this area, the prediction chosen was to follow familiarization research because RV ratings are made before

TABLE 1

Mean and Standard Deviation of Experiment I AV and RV Meaningfulness Scores Across Lists

Order of Meaningfulness Across Lists 1 and 2	AV Meaningfulness				RV Meaningfulness*			
	List 1		List 2		List 1		List 2	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
+ to +	15.17	8.01	8.69	3.57	14.63	5.12	8.44	3.74
+ to -	15.66	5.33	11.88	4.53	14.31	6.19	11.19	5.28
- to +	16.69	6.71	9.31	3.69	19.18	10.00	9.68	4.37
- to -	18.13	10.47	12.19	5.41	17.13	6.74	12.75	3.75

* Order and List interaction for RV found, $p = .03$.

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the learning task is engaged in. Note that the St vs. Re terminology has been dropped in favor of simply considering paired-associate units as bearing a certain logical relation, one with the other. The term "precedent" is used as an adjective, in the sense of "going before" and to that extent capturing the theoretical idea of "setting a course" in meaning-expression. Insofar as two items are relating meaningfully to each other, the precedent member takes priority much in the sense that a premise is all-important to the flow of logical thought. The other paired member now takes meaning from, in connection with, as a consequence of, etc., the precedent member. The adjective "sequacious" aptly captures this notion of following, being dependent upon, or succeeding in logical order the meaning set down by a previous term. It should be emphasized that the precedent member of a paired-associates union need not always be the left-hand member.

Subjects and Procedure. Subjects were 64 (32 males, 32 females) volunteer high school students, drawn from the grade levels above Freshman. They were first administered the 140 trigrams for RV exactly as outlined in Experiment I (ref. above). The AV dimension was not an aspect of this study. Based on these RV ratings, E arrayed a series of eight conditions which perfectly counterbalanced RV for the precedent and sequacious members of two different 6-pr. lists. The transfer paradigm was A-B, C-D, exactly as in Experiment I.

A mixed design of three between-Ss variables and one within-Ss variable was the result (2^4 factorial ANOVA). The factors were Sex X Precedent RV X Sequacious RV X Lists. Eight Ss were assigned to each of these eight conditions. In list 1 an S might thus learn 6-prs. having the intrapair characteristics of Liked (L) precedent member and Disliked (D) sequacious member. This would be tantamount to the high-low pairing of the studies presented in section C of the Introduction (ref. above). For his second list, this S might then learn a list with the order of D-L (low-high in the earlier research). In another condition, S might move across lists having the intrapair characteristics of L-L (List 1) and D-D (List 2). This would be like moving from high-high to low-low in the earlier researches.

The lists were presented by memory drum, with three different orders of lists successively administered to counter serial learning cues. Subjects were requested to read each trigram aloud as it made its appearance and to state "goes with" between pairings of the trigrams. Method of anticipation was followed, with a 4 second exposure time, and two correct anticipations of the entire list taken as the criterion of learning. Total testing time occupied from 20 min. to 1 hr.

RESULTS

Initially, a 2^4 ANOVA was employed, with three between factors (sex, precedent RV, sequacious RV) and one within factor (lists). To focus more specifically on the likelihood of transfer differences across lists when precedent and/or sequacious members were varied for RV while their opposite member was counterbalanced out of the analysis, D-scores (across lists) were employed. A 2 X 4 ANOVA, using the D-scores and combining sex and four patterns of RV (L-L, L-D, D-L, D-D), was run for both precedent and sequacious members (each collapsed on the other, in turn).

Table 2 (see next page) presents the means and standard deviations of the data which entered into these three ANOVAs, broken down according to the RV sequence of PA members. On the left-hand side of Table 2 the RV pairing sequence is precedent to sequacious member for list 1 and then list 2. The next grouping of RV sequence patterns deals with the precedent member across lists 1 and 2; was this member positive or negative in the first and then the second list, and so forth. The final RV sequence grouping looks at the sequacious member in the latter fashion, across lists 1 and 2.

(To refresh the reader's memory, we are using precedent in place of "stimulus" and sequacious in place of "response." We do not accept S-R terminology as the only theoretical language binding on paired-associate researches.)

The initial 2^4 ANOVA tested data presented at the left-hand side of Table 2. The expected practice effect was indeed pronounced, with an F (1, 56) = 36.76, $p < .001$. However, none of the other F-ratios proved significant. The intra-list effects of RV in Experiment II were not found. However, inspection of the data suggested that differential nonspecific transfer across lists was being masked by the heavy gain made in all eight conditions. Hence, the D-scores were arrayed for analysis, and as it turned out, the precedent members data of Table 2 did show a significant RV involvement with F (3, 56) = 2.79, $p < .04$. The comparable analysis for sequacious members was F (3, 56) = .52, N.S.

Hence, although the findings of Experiment II are not especially potent, there is support for hypotheses 2 and 3 in the data analyses.

EXPERIMENT III

METHOD

Hypothesis. (1) Whereas white Ss will be shown to emphasize the AV meaningfulness of trigrams relative to RV, black Ss will reflect the opposite tendency.

Rationale. This line of speculation is outlined in the Introduction (ref. above), and it rests primarily on the work of O'Leary (in press). The study to be outlined is an extension of Hewitt (1969), where trends in line with the hypothesis were noted even before the complete study was conducted.

Subjects. Subjects were 128 female college students (64 black, 64 white) recruited as volunteers from a metropolitan college (St. Louis, Missouri). The Ss were enrolled as either freshmen or sophomores. They were drawn from a larger pool of roughly 400 students who were administered the experimental scale. This community college draws students primarily from the lower-middle and lower economic classes, and is about evenly divided as to the racial characteristics (Negro, Caucasian) of its student body. The Ss ranged in age from 17 to 47 years, with a mean age of roughly 20 years. Statistical tests run on chronological age across the eight experimental conditions (ref. below) established that there were no significant differences on this variable.

Procedure. The typical trigram rating scale has 140 trigrams from the middle ranges of nomothetic AV. But in the present study a special group of

TABLE 2

Intrapair and Interlist Findings on RV for Experiment II

RV Sequence of PA Members	Precedent to Sequacious Member				Precedent to Precedent Member*				Sequacious to Sequacious Member			
	List 1		List 2		List 1		List 2		List 1		List 2	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Like to Like	22.69	11.24	13.75	7.61	23.93	11.41	12.44	5.86	21.38	9.33	12.00	3.78
Like to Dislike	22.25	10.83	15.44	9.39	20.31	10.21	14.19	6.22	24.25	11.08	17.68	8.89
Dislike to Like	24.94	9.36	12.19	3.43	28.00	8.57	17.44	9.84	24.06	9.20	13.94	7.40
Dislike to Dislike	24.31	7.43	15.44	7.49	25.25	5.65	13.44	5.85	22.50	9.42	13.19	7.43

* D-score ANOVA for precedent member transfer reached significance, $p = .04$.

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250 CVC trigrams drawn from a slightly higher range (65-75%) were administered to the 400 subjects initially tested. The typical procedure for rating both AV and RV was followed (ref. above, Experiments I and II). As before, only those trigrams reliably rated as AV-yes, AV-no, RV-liked, or RV-disliked on both administrations were used in an S's paired-associates learning lists. It was thus now possible to construct two reliable 6-pr. lists of CVC trigrams which perfectly counterbalanced for RV and AV both within and across lists (A-B, C-D nonspecific paradigm). The complete design was as follows.

Ss	List 1	List 2
16	AV-yes, RV-liked	AV-yes, RV-disliked
16	AV-yes, RV-liked	AV-no, RV-liked
16	AV-no, RV-disliked	AV-yes, RV-disliked
16	AV-no, RV-disliked	AV-no, RV-liked
16	AV-yes, RV-disliked	AV-yes, RV-liked
16	AV-no, RV-liked	AV-yes, RV-liked
16	AV-yes, RV-disliked	AV-no, RV-disliked
16	AV-no, RV-liked	AV-no, RV-disliked

Half of the Ss in the above eight conditions were blacks, and half were whites. Assignment to a condition was random, once it was established that S had rated enough of her 250 trigrams reliably to be a participant in the study. Trigrams were mounted on slides and presented to S in the learning situation by a Carousel projector with a five second exposure time. An S was instructed to say each trigram aloud on every flash and to say "goes with" between paired associates. All of the trigrams used at this range are considered easy to pronounce, based on the tables of Underwood and Schulz (1960).

The method of anticipation was followed, in which S calls out the second member of a pair before it makes its appearance on the projection screen. Learning criterion was taken as two consecutive correct anticipations of a pair. When this had been achieved, a pair was removed, so that the S's list shortened as she progressed through the learning task. Lists were also shuffled by pairs between pre-criterion trials in order to counter serial learning effects. When list 1 had been learned, S was given a brief period of respite to attend to personal needs and then list 2 followed immediately. The testing time ranged from 45 minutes to 3 hours for the entire sample.

RESULTS

The first point of interest seemed to be an examination of the two independent lists, without considering the question of transfer. Table 3 (see next page) contains the means and standard deviations of the two racial groups, broken down according to over-all AV and then over-all RV within lists.

The data of Table 3 present two versions of the sample learning data, considered first of all in terms of AV meaningfulness with RV counterbalanced out of the analysis (top of table), and then a second time in terms of RV meaningfulness with AV counterbalanced out of the analysis (bottom of table). A 2^3 factorial ANOVA was run for each list of Table 2, having the characteristics of

TABLE 3

Over-all Experiment III AV and RV Data
for Blacks and Whites on Lists 1 and 2

	List 1		List 2	
Meaningfulness Condition	Mean	Std. Dev.	Mean	Std. Dev.
AV-yes:				
Blacks	50.41	20.44	33.44	11.67
Whites	39.81	12.04	27.25	7.10
AV-no:				
Blacks	54.47	20.23	42.12	17.72
Whites	50.25	17.27	35.06	15.05
RV-liked:				
Blacks	47.50	18.89	32.66	10.90
Whites	45.78	17.71	31.31	14.07
RV-disliked:				
Blacks	57.37	20.74	42.90	17.79
Whites	44.28	13.51	31.00	10.46

2(white vs. black) X 2 (AV-yes vs. AV-no) X 2 (RV-liked vs. RV-disliked). This is a one between and two within factorial analysis of variance.

Considering list 1 first of all, a significant racial main effect was found with F (1, 120) = 5.64, p < .01. The white Ss reached criterion in fewer trials (Mean 45.03, Standard Deviation 15.77) than did the black Ss (M 52.44, SD 20.44). A significant main effect for AV was found, with F (1, 120) = 5.41, p = .02. As expected, AV-yes material (M 45.11, SD 17.59) was acquired more readily by all Ss than AV-no material (M 52.36, SD 18.92). The RV dimension did not reflect a significant main effect, but the interaction between RV and race in list 1 approximated significance with F (1, 120) = 3.33, p = .067. As can be seen in Table 3, the nature of this interaction is clearly that blacks do better on RV-liked than on RV-disliked materials whereas the whites at this point find little difference between these two ends of the RV dimension. There was no significant interaction between AV and race, although a suggestion is not difficult to draw in list 1 findings that the whites show a predilection for AV in their learning styles.

Turning to list 2 of Table 3, a main effect was found for race with F (1, 120) = 8.12, p = .005. Once again, it pointed to a superior performance for whites (M 31.16, SD 12.40) over the blacks (M 37.78, SD 15.62). There was also a significant main effect for AV, with F (1, 120) = 12.59, p < .001. As with list 1, this was due to a superiority for AV-yes (M 30.34, SD 10.14) over AV-no (M 38.59, SD 16.81). This time RV also achieved significance as a main effect with F (1, 120) = 4.57, p = .03. As expected, RV-liked material (M 31.98, SD 12.61) was acquired more readily than RV-disliked material (M 36.95, SD 15.76) for all Ss in the study. Once again, AV failed to interact with race but RV reached a significant interaction level with race on an F (1, 120) = 5.16, p = .02. Furthermore, there was a significant triple interaction between race, AV, and RV, with F (1, 120) = 3.59, p = .05. As one can see from a survey of Table 3 means, the continuing predilection of the blacks for the RV dimension and the whites for the AV dimension is clearly evident.

Looked at "within lists," therefore, it is obvious that the experimental hypothesis was being supported. A further demonstration of its validity can be seen by now entering the data into an over-all statistical test, taking into consideration the interlist factors as well. Table 4 (see next page) gives the means and standard deviations of the learning scores, broken down according to the eight experimental conditions diagrammed in the Procedure section (ref. above) for black and white Ss.

A 2 (white vs. black) X 8 (experimental conditions) X 2 (lists 1 and 2) factorial ANOVA was run on the data of Table 4. This is a two between and one within factorial analysis, with repeated measures on the latter variable. Considered as an over-all main effect, the racial variable reached significance with F (1, 112) = 8.55, p = .004. In line with other such comparisons, this referred to a superiority in paired-associates learning for white Ss (M 38.09, SD 13.61) over black Ss (M 45.11, SD 17.74). There was also a main effect for the eight experimental conditions, with F (7, 112) = 2.09, p = .04. A highly significant positive transfer effect was found, with F (1, 112) = 102.69, p < .001. List 1 trials (M 48.73, SD 18.63) were considerably longer to criterion than list 2 trials (M 34.47, SD 14.48) for all Ss.

TABLE 4

Eight Experimental Conditions Across Lists for Blacks and Whites of Experiment III

List 1 to List 2 AV-RV Conditions (Eight Sequences)	List 1		List 2	
	Mean	S.D.	Mean	S.D.
1. AV-yes, RV-liked (to) AV-yes, RV-disliked:				
Blacks	38.13	7.66	32.88	11.15
Whites	40.88	14.87	27.13	5.06
2. AV-yes, RV-liked (to) AV-no, RV-liked:				
Blacks	45.00	15.95	35.00	10.75
Whites	33.38	9.94	39.25	24.71
3. AV-no, RV-disliked (to) AV-yes, RV-disliked:				
Blacks	52.00	19.29	37.38	15.33
Whites	45.88	15.16	29.00	9.80
4. AV-no, RV-disliked (to) AV-no, RV-liked:				
Blacks	59.00	18.37	32.13	13.46
Whites	46.25	17.66	33.13	7.75
5. AV-yes, RV-disliked (to) AV-yes, RV-liked:				
Blacks	51.13	17.80	31.75	11.62
Whites	40.63	9.64	24.37	4.75
6. AV-no, RV-liked (to) AV-yes, RV-liked:				
Blacks	52.50	18.40	31.75	11.62
Whites	59.88	15.03	28.50	8.47
7. AV-yes, RV-disliked (to) AV-no, RV-disliked:				
Blacks	67.38	27.28	51.63	16.40
Whites	44.38	13.30	32.00	10.68
8. AV-no, RV-liked (to) AV-no, RV-disliked:				
Blacks	54.38	28.09	49.75	22.96
Whites	49.00	21.14	35.88	14.64

Differing transfer effects for combined racial groups were found, with an interaction between the eight sequence conditions of Table 4 and the two lists achieving an F (7, 112) = 3.49, p = .002. This tells us that there are differential effects for all Ss taking place across lists depending upon whether AV and/or RV meaningfulness was involved in the task. But what of race in this transfer effect difference? The triple interaction between race, the eight sequence conditions, and lists failed to reach significance with a weak trend F (7, 112) = 1.62, p = .13. It would seem that the pronounced positive transfer effect for all conditions except 2 negated the likelihood that a significant interaction of this complexity would be achieved. Hence, although the interlist (transfer) findings of Table 4 on racial differences are not quite as clear as the intralist findings, there is enough statistical significance in the sum total of our data to allow for a detailed examination of Table 4 findings.

An impartial survey of Table 4 must surely arrive at the conclusion that black Ss in this study were learning more along an RV than an AV dimension, whereas the opposite tendency was true for the whites. Note condition 2, in which Ss were moving from a list with AV-yes, RV-liked to a second list having AV-no, RV-liked. This is tantamount to taking AV meaningfulness "out" of the second list while retaining RV meaningfulness intact. Under this condition the eight white Ss demonstrated a negative transfer effect, whereas the eight black girls continued to improve on their second list and actually outperformed their white counterparts on list 2.

We find a comparable development in condition 4, where Ss moved from AV-no, RV-disliked to AV-no, RV-liked. Although the eight black Ss in this condition began with a 13 trial deficit on list 1, at list 2 they had achieved a one trial advantage over the white Ss. It has been found in cross-validation that moving from a disliked to a liked list is the most advantageous sequence for positive transfer, whereas moving in the opposite direction is the least advantageous sequence (Rychlak & Tobin, 1971; ref. above, Experiment I). Note in conditions 1 and 8 of Table 2, where RV is changing across lists from positive to negative, that it is the blacks who reflect the least transfer effect.

There are four instances of a black superiority over whites in the learning data of Table 4 (conditions 1, 2, 4, 6), and in each case - whether these be first or second list advantages and regardless whether AV was "in" or "out" of the list - the common denominator is that RV-liked was present. The meaningfulness afforded by AV-yes when RV was negative always favored the white Ss of this study (conditions 3, 5, and 7).

CONCLUSIONS

Taken en masse, the findings of the three experiments lead the project director to conclude:

(A) Affective assessment (RV) plays a role not only in the single learning situation, but it has an effect across relatively unrelated verbal learning tasks as well.

(B) The order of "best to poorest" nonspecific transfer across learning tasks is as follows: RV-disliked to RV-liked; RV-liked to RV-liked; RV-disliked to RV-disliked; and RV-liked to RV-disliked.

(C) Within lists, when two members of a pair are being "associated," there is some reason to believe that RV works more effectively at the primary or precedent end of the pair than at the secondary or sequacious end. This implies that RV functions as a form of "logical premise" coming into play at the outset of S's learning efforts.

(D) The white individual seems more likely to acquire verbal material in terms of its word-quality than its affective-assessment value, whereas the black individual seems to function vice versa. In line with conclusion C, this would suggest that the two races have slightly different premises as regards what is or is not significant material in a learning situation.

It should be evident to the reader that in working out the RV line of research an alternative view of the learning process is being undertaken, one which does not rest upon (a) the classical division between emotions as "motivators" of behavior vs. learning as a process independent of this motivation, nor does it (b) fall back on stimulus-response theory to explain the findings.

Psychologists have tended to focus on the physical aspects of emotion, but from the point of view now being espoused the major element of an emotion is that it is a judgment, an act of evaluation which the individual brings to bear on experience even as that experience is supposedly "shaping" him in this or that way. Man is not only a "responder," victim of the environment in a passive way. He can and does assess that environment, and this assessment has a part to play in how he absorbs (learns) the essentials of that environment.

Theoretical Statement. It seems relevant at this point to at least suggest to those readers of this report who might care to take the time precisely how RV may be said to "work" independent of the frequency theories of learning which we are attempting to circumvent (not deny). The reason frequency explanations are so important in experimental psychology is because the major theoretical device used in explanation is "time." Indeed, the very notion of a cause is tied exclusively to the time dimension. Causes take place over time, and they flow from antecedents (stimuli, independent variables) to consequents (responses, dependent variables). Since psychology strives to present a "rigorous" scientific account of behavior, only that behavior which is extraspectively observable "over there" in third person fashion is to be written into a theoretical account. To "guess at" variables "within the organism" at the introspective theoretical perspective is considered less than rigorous scientific theorizing. Hence, one is to observe behavior "over there," map it, graph it, predict and control it, but in so doing invariably the base-line along which it is now seen changing (literally "behaving") is the time dimension. And since predictable change or uniform (changing) behavior is thought to be learning, or the product of learning, it follows that learning takes place over time.

Looked at in terms of historical precedents, another way of saying this is that psychologists have attempted to continue their levels of explanation in the "natural science" vein. They have tried to rely exclusively on the efficient cause, an impetus construct which focuses on the propulsion or lawful ties of antecedents to consequents over time (Rychlak, 1968, chp. VIII). Yet, not all antecedents need be thought of in this "A-directing-B across time" sense. In logic, for example, the antecedents and consequents of an "If, then..." proposition are not efficient causes so much as they are formal causes, patterns of inference which truly determine conclusions but are not themselves within time.

Or, take the syllogistic sequence of "All men are mortal; this is a man, hence ?" The conclusion is inescapable and so long as the logical structure of the syllogism - that is, its patterning - is not violated, the conclusion must follow. Errors in major premises are, of course, possible, but we are not concerned here with the truth value of a specific conclusion. The point is, time is irrelevant to the nature of the conclusion which is eventually drawn. It is the same for a deck of IBM data cards, about to be put into a computer. The statistical tests (F, t, r, etc.) are already "there" within time, even though it takes a period of time to extract the values on the cards and record them via a print-out.

Frequency explanations of learning gain considerable support from the seeming tie they have to mathematics. As extraspective observer the psychologist makes counts of his data, and then enters such measures into frequencies, statistical tests, and so forth. He incorrectly assumes that the reason he believes that "this sample" is different from "that sample" is because he has somehow counted them differently. Yet, it can be shown that the real reason he adapts his thinking to a research finding - he learns something! - has nothing at all to do with frequency. The real reason stems from a logical plausibility, the fact that his "critical ratio" exceeded or failed to exceed a certain value. When the critical ratio is "one," he has found "no differences" or learned nothing new. In other words, he has expressed a tautology: "This sample is identical to that sample, as regards my measure and insofar as I can show empirically."

Carried a step further, it is not difficult to show that all of mathematics rests on such "theme and variations" around what is identical and what is diff erent from something else. The central limit theorem, the Pythagorean theorem, and even the humble equation sign of a mathematical proof all resolve themselves into tautologies. We learn best when we find that what we learn is consistent (literally identical, by degrees) with what we already know. Extending this line of theory, an analogy is thought of as a "relation of likeness" between seemingly disparate events or items. Yet, surely it can be argued that the analogy is a variant form of tautology, in which only a restricted identity - called now "likeness, similarity, rough equivalence, etc." - is the case. The analogy may in fact be redefined as the "probability of tautology between items," thereby giving identity a "more or less" (probable) phrasing.

Hence, the psychologist who is willing to "guess" about the introspective machinations of human learning can begin with a theory of similarity and differences of this sort. He would rely now more on a patterned construct (formal cause) "for the sake of which" (final cause) the individual could be seen to

behave. We have termed this above a "premise" and therefore view the human intellect as a "premising intellect," which judges experience on a continuing basis. Intellect is active. Judgment is clearly not something which takes place "after the fact." Even the infant, before language capacity, "feels" and hence judges his environmental circumstance. He is not taught to judge for his basic emotive capacity ensures that he will judge even though the grounds for this judgment are nothing but his crude feeling tones.

The theory which sustains RV research takes off from this construct of a tautological form of learning. A tautology is a "pattern of identity between two or more elements." Even as the psychologist learns his statistical procedures through the tautologies of mathematics, so too does the S learn by tautologies of many sorts (some of which we call analogies). It is further assumed by extension that individuals tautologize themselves with items in their environment depending upon how they affectively "feel" about themselves and items in their experience.

Once the normal individual has pre-judged items of experience in terms of "good vs. bad" or "like vs. dislike" he identifies himself (tautologically) with those items he has evaluated as "good" or "liked" because he literally views himself as good or as likable. Those items judged positively thus take on more meaningfulness. He literally "knows" them by right of evaluation, and hence when subsequently asked to acquire them in a task over time, he brings out the patterned identity in a way making it appear he is learning faster over time. Rather, he, as the IBM deck, is merely taking (somewhat less) time to present the patterned identities already intended or implied in his RV evaluations. The tautology here is from (liked) SELF to (things liked by the) SELF.

A point to counter is: Must S literally "feel" emotively positive or negative in order for his ratings to make sense? We do not think so. Even when pressed into judging, Ss of RV researches have been shown to meet predictions. The point of importance is the judgment. One does not need love welling-up "physically" in his breast at this moment to say that he indeed loves his child.

The reference to a tautology with the "self" is extremely important to RV theory, since this formulation is written from the introspective perspective. It is the attitude toward self which forms the basis for a judgment about materials never before seen by S. Lacking a meaningful standard in the AV sense on the basis of which to judge some item, the S can always substitute the meaningfulness provided by a dialectical "positive-negative" judgment in relation to his personal identity. It follows that the abnormal person, feeling negatively about himself, would be prone to tautologize along the negative! We should expect the mentally ill individual to acquire his disliked materials more rapidly than his liked materials. This is exactly what has been found in cross-validation (Rychlak et al., 1971).

Affective Assessment and the Black Culture. It is extremely important to appreciate that most if not all learning theories today must find in the black community's seeming inferiority to the white community on tests of intelligence, or in school-like tasks, a deficiency of either (a) frequency of exposure to such intellectual tasks, or (b) inborn capacities of a racial nature. The first

alternative suggests a "pump-priming" tactic of getting "more frequencies into" the black culture, as in the "Head Start" efforts, and so forth. Doubtless such efforts have their place and their pay-off. The latter alternative (b) invariably comes down to some form of genetic transmission discussion, which the black individual justifiably feels is a racist formulation.

We now have the possibility of an alternative formulation, one which sees the vital role which affective assessments play in the learning styles of people. This evaluative capacity is far more central to human learning than the laboratory-centered theories of learning using lower animals and IBM machines as analogues have made it appear. Following in this vein, if a culturally-deprived or impoverished group - lacking the socio-cultural verbal contents on which the intricacies of meaning are to rely, or, alternatively, simply not accepting the more "intellectualized" view of the world which such verbal distinctions generate - is now placed in a situation calling for the acquisition of words, what might be the outcome? It does not seem a stretch of the imagination to suggest that this group might fall back on the alternative dimension of meaningfulness which is so basic to human nature - an affective dimension of worth and significance.

Furthermore, once alienated from the broader culture and made to feel inferior in these more verbalized tasks (which take on RV-negative), it follows that simply "exposing" the repressed group to such factors will not accomplish the rapid improvement that is to be expected in the broader culture. Indeed, the affective meaningfulness of life may have taken on an ethos all its own by this point in historical time. The <u>value</u> of intellectualized achievement is not to be presumed in the case of such a repressed group. This has nothing to do with genes or blood lines. It is a purely socio-cultural difference across groups.

Values are like premises. They indicate what it is the individual proceeds "on the basis of" in his life beliefs. Values as premises are not always stated, of course, but the project director does not find it difficult to entertain an RV type of value as paramount in the black culture. Popular descriptions of the black ethos seem to us in line with such a view, since the emphasis on interpersonal relations and accompanying feeling-tones seems a major value of the black community. Note that this is a fundamentally <u>healthy</u> adjustment to circumstance - exactly the opposite tendency we find among abnormals. But there is a mixed-blessing in the adaptation to the white man's culture for the black. He is thrust into precisely that situation which he (often) does not value, and thereby falls back on his typical learning style to reflect a larger RV component in learning than his white counterpart.

Modern theories of education must appreciate this aspect of the black psychology, and some allowance must be made for it in seeking to work out programs for the education of blacks. The black community must itself be made aware of these styles which define its general approach to education so that it can make a more proper assessment of itself, its values, and aspirations for the future. Yet how is this possible in a "technical" sense if our theories of learning now view affective factors as secondary to the learning process, as "energizers" rather than as basic elements of what it means to learn the meanings of life? This leads us into the next section, having to do with recommendations in this line of experimentation.

RECOMMENDATIONS

The most general recommendation seems to be that we make every effort to continue this line of study, believing as we do that it will continue to bear fruits and thus inevitably have an impact on both psychological and educational theory in various ways. Some points follow.

Contributions to Basic Educational Theory. The project director has known and talked with educators at length over the years, and he knows that it is not unusual for a teacher to consider psychology and especially paired-associate studies - to be far removed from what he does in the classroom. We have agreed with much of this criticism. But in the case of RV study, we feel that a more direct parallel is under study.

That is, in viewing the learner as tautologizing and thereby analogizing to acquire information even as information is being "fed in" by the environment, we have completely reversed the typical laboratory conception of what he is. Rather than simply a mediator of past inputs, a kind of mechanical contrivance relying on the frequency thesis under the guise of familiarization, practice, warming-up, rehearsal, and other such terms, the RV line has put the learner at the center of the process. He construes, evaluates, and orders his absorption of material according to its relevance for him as a person. His self-identity is part and parcel of this process.

In a way, we have succeeded here in bringing together the present thinking of people like Rogers (1961, pp. 297-313) and the much earlier theories of people like Thorndike (1913, pp. 23-31). That is, Rogers advocates "student centered teaching," and though he does not conduct laboratory-based researches to support his thesis, the RV line could well be taken as evidence for his general position. And though his "law of effect" (frequency thesis) is given major prominence in psychology, we overlook Thorndike's laws of "prepotency of elements" and "response by analogy" - both of which emphasize something akin to our tautological and ana logical theory. Of course, from our point of view to tautologize or analogize is not merely to "respond." Responses are passive, coming "after" a directing stimulus. We think of emotive assessment, judgment, and hence tautologizing or analogizing as a "before," an act of precedent premising which thereby brings about the more sequacious result of this or that line of behavior.

By overlooking affective assessment in the classroom, we may have rejected some earlier "rule of thumb" observations which led to currently discredited theories without proper evidence. Take the issue of formal discipline, for example (study Greek to facilitate learning mathematics). Although considered a dead issue by many, if the present researches are capable of generalization, then it is just possible that this theory had some merit. It was not that learning un-related course-subjects reinforced one another on the order of a muscle-training. Memorizing Greek or Latin did not simply build up the "brain-muscle" to make not only language (specific transfer) but mathematics (nonspecific transfer) easier to obtain mastery over. Rather, if the teacher perchance began the school session (in the morning, just after lunch) with such classical studies, and if we can assume that a large number of students found them unlikable (RV-negative), then

moving on to a more liked (and unrelated) subject in the succeeding hour would have provided conditions for maximum positive (nonspecific) transfer. The mathematics might indeed have gone better, thanks to the less desired "practice" in Greek.

Implications for Classroom Practice. Continuing in the vein of the preceding section, it would follow that studies might eventually be conducted on the sequencing of coursework, strategically arraying subgroups of children according to their preferences in such a way as to maximize learning. It is the project director's feeling that much of the benefit of so-called "self-selection" or "working at the child's own rate" devices which have been fostered since the time of John Dewey relies in large measure on RV principles. That is, when a child is left to his own devices, the tendency is to move from a "little of disliked" to a "lot of liked" and then back to a "little of disliked" material once again. Either this, or the child spends his entire time on liked material, which is our second best condition for nonspecific transfer.

Of course, no one in life can like "everything" which he confronts and is asked to learn - or is expected by society to learn. Hence, as teachers, the recommendation to our students who must get through an evening's homework is that they do their disliked subjects first. In the classroom our problems are multiplied by the fact that many children must be taught in a group and we cannot order materials according to affective preference for everyone, because such preferences are basically idiographic. Yet, modern approaches to education seem to be doing more and more of this, through individual study, and the RV line would applaud such efforts since they maximize acquisition.

A very basic issue in the application of RV principles has to do with this question of "who decides?" what is a "positive reinforcement" for a student. Can the teacher always know what the child will find likable by deciding for the child? Obviously, he cannot. The RV line would shift the focus or perspective of evaluation from the environment to the individual student. This may call for such things as bringing students - even very young students - into the planning and designing of classroom routine. At the very earliest class levels this may prove infeasible (though self-selection and self-motivation tactics do essentially this); but surely at the higher levels this would not be impractical. Much of what is termed "authority" reactions by the classroom student probably can be seen in part as an RV involvement.

This is not to say that children should avoid what they dislike (though in some cases that may be necessary). The point of RV study seems to be that disliked materials (coming first) should be presented as instrumentalities to the more liked (coming last) items in life. Cycling the child's awareness from a little-disliked to a lot-liked is not a bad philosophy of education, so long as a return to the more emotively negative is periodically attempted. We do not agree that only positive reinforcements should be used to "manipulate" behavior. What is positive and what is negative is up to the individual, and he should be encouraged to confront both types of experience in daily living.

We would like to see RV extended to actual coursework, along the lines already outlined. Such studies can easily be designed and carried out, but it is essential

to underwrite such applications with firm laboratory evidence as well - where controls are better achieved, hence the effects of RV will not be so easily discredited with some hidden frequency thesis. We would in particular like to study children with "learning blocks" in this regard, as well as the "under-achiever." We suspect that both of these designations are heavily confounded with emotive factors in the RV sense.

Considering now the obviously great impact which RV may be having on the black community, everything which we have stated above is doubly important to the education of a black child. The problems for the teacher here are often great, due to the alienation (negative RV) the black child may bring to the classroom. How to alter this evaluation to the positive may represent a major portion of the teacher's initial time. Indeed, the teacher may need the help of people (including blacks) in the community, to help revise the black community's estimate of education in general - as not simply a "white man's game," and so forth. No teacher can overcome such factors in the classroom, swept up as he or she is in a social evolution of great strain for all concerned.

But at least we need not think of the black's relatively lower performance in only "innate" or "racial" terms. Confronted with a theory of learning which accounts for his performance in humanistic terms, the black can now begin entering into the process as never before. No one can simply "input" information into him, no matter how early they start in his life or how often they repeat and repeat and repeat things to him. He must contribute something to the process at the outset, by judging and hence deciding what it is that he is about.

Potentials for Diagnostic Applications. Though the present work was not devoted to the "RV-reversal" phenomenon, it goes without saying that there are tremendous possibilities here for further work and potential benefit to the culture. That is, if it were possible to assess the more serious adjustment problem in terms of a move from learning positively to learning negatively rated materials most efficiently, then one could introduce a fairly routine process of diagnosis for suspected cases of abnormality.

That is, our findings to date would suggest that as RV-reversal extends to more and more aspects of life the individual's personal adjustment is slipping to ever more dangerous "lows" in life. He is acquiring precisely that sort of experience which he might - in more normal states - prefer to avoid. He is tautologizing along the negative with increasing regularity. By the time this psychological proclivity is identified with the present means at our disposal (which usually means by the time he has a breakdown), this individual is in serious difficulty. If, on the other hand, we were able to test our young people in a fairly routine fashion on the basis of affective assessment, we might just be able to catch this tendency to abnormality in its earlier stages.

This is admittedly a highly speculative and possibly unreasonable projection for the RV line. But we would indeed like to find out what proportion of young people do "learn along the negative." One could use such findings as independent variables, and then look carefully into the backgrounds and typical behavioral patterns of children so identified by a pretest.

Probably the major diagnostic tool in education today is the intelligence quotient (IQ), which many blacks feel is the bane of their existence. Most practicing psychologists will candidly admit that they cannot define intelligence with any degree of personal satisfaction or belief in the accuracy of their definitions. The IQ is easier to define, as a statistical value based upon test performance in "school-like" tasks. Well, we have some interesting findings already on the relationship between intelligence and school performance. We find that the RV-positive effect is maximized as intelligence or IQ drops off, but that it is also maximized as motivation for school work typified as underachievement is the case. In other words, both dull and bright children can be seen maximizing their liked vs. disliked performances on materials termed school-like.

It follows that in the school class a child with either high or low potential may perform similarly on certain subjects. What differentiates the "underachiever" from the "low performer" in our thinking is the IQ score. We assume that the underachiever "really has" potential which he is not showing in the classroom (based on his IQ). But what if we now extend this logic - as many do - to the IQ test itself? What if the low IQ child has potential which he is not manifesting in the testing situation? This seems to be the black's polemic against testing, as a constraining influence making assumptions about those to whom tests are administered which are not warranted.

It is our feeling that RV study, combining such factors as intelligence, racial identity, and classroom performance, should help us to identify (diagnose) more of the variance which goes into the judgment of "bright" and "dull" than we now possess. Work on the borderline and the mentally retarded is also called for. It may be that by focusing effort on the disliked with the mentally retarded we completely misfire. Of course, we do not yet know whether it is even possible to get reliable RV ratings with the very low IQs. We have done some pretesting with borderline levels (60-80) and established that RV ratings and RV effects are possible. But here is a direction which should be furthered in the future. Just knowing what the effects of RV are on the ordering of Stanford Binet or Wechsler subtests would be of significance. If we are correct in our findings on RV transfer, it goes without saying that such intratest orderings "make a difference" to the subject's eventual score and the patterning of his subtest performance.

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